

JPL Subcontractor Environmental, Health, & Safety Requirements

(RFP Attachment B-13)

1. Introduction

- 1.1 Subcontractor shall take all reasonable measures in the performance of the work under this Subcontract to protect the safety and health of Subcontractor's employees and lower-tier subcontractors, JPL employees, and members of the public who might be affected by Subcontractor's work. This document describes JPL-specific environmental, health and safety requirements ("JPL EH&S Requirements") that Subcontractor must comply with in performing work under the Subcontract.
- 1.2 Subcontractor shall comply with these JPL EH&S Requirements as well as all applicable federal, state and local environmental, health and safety laws and regulations, and any other safety and occupational health measures (collectively, "Applicable EH&S Standards"). Subcontractor shall ensure that all lower-tier subcontractors are aware of and in compliance with Subcontractor's approved safety and health program as well as all Applicable EH&S Standards. Subcontractor shall comply with the substance of this document in all lower-tier subcontracts issued under the Subcontract. JPL may notify the Subcontractor in writing of noncompliance with an Applicable EH&S Standard. Subcontractor shall promptly implement any corrective measures and report in writing to JPL on the actions taken.

Note: *This document is not intended to and does not contain a comprehensive listing of all Applicable EH&S Standards. It addresses how certain Applicable EH&S Standards are specifically applied at JPL. In addition to complying with this document as part of the Subcontract, Subcontractor remains responsible for determining for itself which laws and regulations apply to its work under the Subcontract and for complying therewith.*

- 1.3 Unless otherwise indicated in this document, *Subcontractor is required to submit all deliverables specified herein, including but not limited to those listed in Section VI in a Safety Manual, to the JPL Subcontracts Manager within the timeframe specified herein.*

2. Safety Requirements

2.1 General

- 2.1.1 Subcontractor is responsible for ensuring that its employees and lower-tier subcontractors are aware of the hazards associated with any specific task that will be performed pursuant to the Subcontract. Subcontractors are required to show one of the following Safety Awareness videos applicable to the work/classification to their employees who will perform work at JPL PRIOR to start of work at JPL Oak Grove facility:
- Construction Worker
 - Construction Supervisor

- Category A/Consultants and all classifications other than Construction

These videos can be accessed at <http://acquisition.jpl.nasa.gov>

- 2.1.2 Subcontractor is responsible for providing all safety equipment and personal protective equipment appropriate for the task. Subcontractor is responsible for providing required medical clearance and training for its employees.
- 2.1.3 Subcontractor is responsible for maintaining a safe job site and job site perimeter and for providing traffic controllers for both vehicle and pedestrian traffic when the normal traffic pattern is interrupted by facilities or construction activities at any worksite. Traffic controllers and all other Subcontractor personnel working in roadways shall wear high-visibility vests. Subcontractor shall provide necessary barricades, hazard warning tape, traffic signs, and trench cover plates for pedestrians and vehicles.
- 2.1.4 Any use of JPL-owned emergency equipment and fire hydrants for other than emergency purposes is prohibited, unless specific approval is first obtained from the JPL Construction Administrator.
- 2.1.5 Subcontractor personnel shall maintain a state of cleanliness and orderliness in work areas at all times. Stock items, furniture, equipment, interior decoration, vehicles, debris, or other substantial physical objects shall not be placed or stored temporarily, or permanently, in a path of emergency travel (i.e., corridor, exit door, stairway, or point of exit discharge), without the approval of the JPL Fire and Life Safety Authority having jurisdiction. Hallways, doorways, stairwells, lobbies, and areas beneath stairs shall be maintained free of trash and debris and shall not be used as storage space. No object shall be located in such a manner as to prevent access to, or use of, fire protection equipment (i.e., fire extinguisher, fire alarm pull stations, hydrants, fire hose outlets, sprinkler valves, or Fire Department connections).
- 2.1.6 Subcontractor and its lower-tiers must complete and submit JPL form titled "Experience Modification Rate (EMR) Form" which includes the past three years' Experience Modification Rate (EMR), OSHA Recordable/Lost-Time Incidents Rate Form. These forms shall be submitted in the Safety Manual. This data will be reviewed by the JPL Occupational Safety Program Office (OSPO) for acceptability. JPL strives to ensure that all Subcontractors have a current workers' compensation EMR between 0.8 and 1.0. A Subcontractor or its lower-tiers, on an exception basis, may be eligible to perform work at JPL with an EMR greater than 1.0, however, JPL may require additional documentation, which includes, but is not limited to, a written plan of action to address the Subcontractor's unfavorable EMR as well as a detailed hazard assessment relative to the proposed scope of work. Additionally, the Subcontractor may be asked to provide OSHA Citation History. All requests for an exception will be at the discretion of JPL's OSPO, which will provide a technical review of all deliverables relative to safety and health. Should JPL find the EMR to be unacceptable, the Subcontractor's bid will not be accepted.

JPL will evaluate every Subcontractor's injury, illness, and fatality data. This must include the number of OSHA recordable injuries/illnesses per year for the past three years and the number of lost-time injuries/illnesses for the past three years. The Subcontractor must include the annual OSHA recordable case rates and lost-time case rates for the past three years (see above). Every Subcontractor must have both a total recordable case rate and cases with days away from work, job transfer, or restriction rate equal to or less than the current national average for the Subcontractor's respective North American Industry Classification System number (NAICS) that is published by the Federal Bureau of Labor Statistics.

2.2 Fire Protection

- 2.2.1 If work is required on a JPL fire protection system, Subcontractor shall contact the Construction Administrator to work with the JPL Fire Department or Maintenance to turn off, or turn on the fire protection system. *No other personnel shall be permitted to operate a fire protection system.*
- 2.2.2 Any impairment of a fire protection system that lasts longer than 8 hours shall be documented by Subcontractor using written records for approval through the Construction Administrator.

2.3 Emergencies / Incidents and Mishap Reporting

- 2.3.1 In the event of an emergency, from any JPL phone dial 911. From a cell phone or non-JPL phone dial 818-393-3333 or 818-354-3333. Be prepared to provide the following information to the operator: your name, company, the nature of the problem and the location. Stay on the line until you are told to hang up. JPL Fire Department emergency personnel will be dispatched to the site. For work being performed at Goldstone or Table Mountain Facility, refer to specific local emergency procedures at those facilities.

Note: *Per NPR 3792.1, applicable Subcontractor personnel shall undergo drug-testing after a mishap if the mishap results in a fatality or personal injury requiring immediate hospitalization or if damage is estimated to be in excess of \$10,000 to government or private property.*

- 2.3.2 The Construction Administrator shall be the initial point of contact for all mishaps and close calls, and will work with the Occupational Safety Program Office (OSPO). Initial notification of all mishaps shall be made to the Immediate Mishap and Close Call (IMACC) Reporting Line **818-354-4121**.
- 2.3.3 Telephone notification shall be made as set forth in Table 1.
- 2.3.4 For all categories of mishaps, an initial report must be submitted within 8 hours.
- 2.3.5 All mishaps shall be investigated to the extent necessary to determine the Proximate causes and the Root causes.

2.3.6 The initial mishap report must include:

- Mishap Report Form (in Subcontractor's format)
- Investigative findings
- Initial corrective actions
- Proposed and/or completed corrective actions
- Lessons learned.

2.3.7 A detailed follow-up report must be submitted to the Construction Administrator within twenty-four (24) hours from time of mishap, and subsequent report(s) must be submitted to the Construction Administrator if additional information becomes known by Subcontractor and/or until all information required above has been provided.

2.3.8 All mishap reports must be completed within the following timeframes unless mitigating circumstances are present (i.e., corrective actions are not complete, employee still on lost time, final cost not available):

- 30 days for Occupational injury and/or illness mishaps
- 60 days for property damage mishaps

Note: *If mitigating circumstances are present, the mishap report must be reviewed and an updated report submitted to the Construction Administrator every 30 days until all corrective actions are closed and/or the employee returns to active duty.*

2.3.9 Subcontractor shall provide to the Construction Administrator quarterly reports specifying lost-time frequency rate, number of lost-time injuries, exposure, and accident/incident dollar losses.

2.3.10 A Subcontractor onsite injury or illness that is classified as a Type C mishap, Type D mishap or Close Call may be investigated by the Subcontractor. The mishap report must be provided to the NASA Management Office at JPL, and NASA has the option of completing the endorsement process. If the onsite incident has been classified as a Type D mishap or a close call involving government property damage (including flight hardware, ground processing equipment, and /or the ground facility), the NASA appointing official may allow Subcontractor investigation of the mishap if the following conditions apply:

- a. NASA serves as the appointing official and approves the investigating authority.
- b. The investigating authority has the same membership (e.g., disciplines and training) as defined in NPR 8621.1B with the exception that all members and advisors are Subcontractor personnel.
- c. The investigating authority performs the investigation per NPR 8621.1B with the exception of taking privileged witness statements.
- d. The investigating authority produces the products listed in Figure 5 of NPR 8621.1B.

- e. The NASA appointing official reviews and endorses the report.

Note: *See detailed Mishap Classification and Reporting requirements on the next page.*

Table 1:
Mishap Reporting Classification and Reporting Requirements
JPL Mishap Reporting Classifications and their associated definitions.

Classification Level	Injury	Property Damage	Reporting Time Requirements to OSPO
Type A Mishap	Occupational injury and/or illness that resulted in: A fatality, or, A permanent total disability, or, The hospitalization for <i>inpatient care</i> of 3 or more people.	Total direct cost of mission failure and property damage is \$2,000,000 or more,	Immediate telephone notification (within 1 hour) of knowledge to OSPO at 818-354-2141 <i>Note: Subcontractors are responsible for Cal/OSHA notification. Notify OSPO of the report to Cal/OSHA.</i> Initial written mishap report submitted within eight (8) hours.
Type B Mishap	Occupational injury and/or illness has resulted in permanent partial disability, or, The hospitalization for <i>inpatient care</i> of 1-2 people	Total direct cost of mission failure and property damage of at least \$500,000 but less than \$2,000,000.	Immediate telephone notification (within 1 hour) upon knowledge to OSPO at 818-354-2141 <i>Note: Subcontractors are responsible for Cal/OSHA notification. Notify OSPO of the report to Cal/OSHA.</i> Initial written mishap report submitted within eight (8) hours.
Type C Mishap	Non-fatal occupational injury or illness that caused any workdays away from work, restricted duty, or transfer to another job beyond the workday or shift on which it occurred.	Total direct cost of mission failure and property damage of at least \$50,000 but less than \$500,000.	8 hours from time of knowledge to OSPO at 818-354-2141 Initial written mishap report submitted within eight (8) hours.
Type D Mishap	Any non-fatal OSHA recordable occupational injury and/or illness that does not meet the definition of a Type C mishap.	Total direct cost of mission failure and property damage of at least \$1,000 but less than \$50,000.	8 hours from time of knowledge to OSPO at 818-354-2141 Initial written mishap report submitted within eight (8) hours.
Close Call	An event in which there is no injury or only minor injury requiring first aid, but which possesses a potential to cause a mishap.	An event in which there is no equipment/property damage or minor equipment/property damage (less than \$1,000), but which possesses a potential to cause a mishap.	8 hours from time of knowledge to OSPO at 818-354-2141 Initial written mishap report submitted within eight (8) hours.
High Visibility Close Call	An event in which there is no injury or only minor injury requiring first aid, but which possesses a potential to cause a mishap <u>AND is a high visibility concern*</u>	An event in which there is no injury or only minor injury requiring first aid, but which possesses a potential to cause a mishap <u>AND is a high visibility concern*</u>	Immediate telephone notification (within 1 hour) upon knowledge to OSPO at 818-354-2141

* Mishap/Close Call incident considered to possess a high degree of programmatic impact or public, media, or political interest including, but not limited to, mishaps and close calls that impact flight hardware, flight software, or completion of critical mission milestones.

2.4 Hazardous Material Use

- 2.4.1 Before hazardous materials are brought on to any JPL site, two (2) copies of all Material Safety Data Sheet (MSDS) sheets shall be submitted by Subcontractor in the Safety Manual for review by the appropriate OSPO and JPL Environmental Affairs Program Office (EAPO) representatives. Where hazardous materials are used at the job site, Subcontractor is responsible for contacting the Construction Administrator for Material Safety Data Sheets (MSDS) related to hazardous materials used at the job site.
- 2.4.2 Subcontractor shall immediately report all spills to the Construction Administrator. If the spill results in an immediate hazard to personnel or property, Subcontractor shall call the JPL Emergency number (818-393-3333 or 818-354-3333) for assistance. Subcontractor is responsible for containing and cleaning up all spills when directed based upon a determination of the hazard made by the JPL Fire Department.
- 2.4.3 If Subcontractor brings radioactive sources and/or x-ray equipment on site to JPL, a request shall be made to the Construction Administrator for review. Requests shall be made at least five business days prior to bringing such materials and/or equipment to JPL. Subcontractor bringing radioactive materials and/or machines/equipment utilizing ionizing radiation shall complete and submit Form 7135, "Radioactive Materials Use Authorization Request", and/or Form 7136 "Ionizing Radiation Machine Use Request/Authorization" to the Construction Administrator. Once the request is granted, Subcontractor may bring these onsite.

2.5 Asbestos Containing Material (ACM)

- 2.5.1 Asbestos Notification Memorandum, Form 2895 which identifies buildings known to contain friable asbestos containing material is incorporated into this Subcontract. Subcontractor shall distribute the notice to its personnel prior to starting any work. It is the responsibility of Subcontractor to ensure that all precautions are taken to avoid exposure of Subcontractor personnel, lower tier subcontractor personnel, as well as JPL employees to these materials if Subcontractor personnel will perform any work in areas where ACM is or might be present. Subcontractor shall request the Construction Administrator provide an asbestos report identifying the specific locations of the ACM.
- 2.5.2 OSPO shall review all subcontractor Work Plans for asbestos-related operations (Class I, II, III or IV) as defined in Title 8, California Code of Regulations (8CCR1529). If the Subcontract will access a ceiling plenum where ACM is present in the ceiling tiles, fireproofing on building structural members such as I-beams and/or thermal system insulation on pipes and a likelihood exists that

ACM will be disturbed, the Subcontractor shall include detailed procedures in the Work Plan of the precautions to be implemented to protect its personnel and the surrounding areas prior to, during and after access. The Work Plan shall also include detailed procedures for cleanup in the event of an accidental disturbance of ACM. If Subcontractor is to perform abatement work, Subcontractor first shall submit an Asbestos Abatement Work Plan in the Safety Manual. The Asbestos Abatement Work Plan shall consist of a detailed and comprehensive work description relating to the asbestos abatement and waste disposal activities.

- a. Upon request, Subcontractor shall provide copies of appropriate worker training, respirator training and fit testing, medical surveillance certificates, permits, daily logs, air monitoring data and laboratory analysis reports to the Construction Administrator.
- b. If Subcontractor discovers during the course of work unanticipated Presumed Asbestos Containing Material (PACM) and/or ACM, Subcontractor shall stop work immediately and notify the Construction Administrator at once with information regarding the location and quantity.
- c. When Subcontractor performs asbestos abatement, Subcontractor shall provide area/clearance air monitoring reports to the Construction Administrator prior to re-occupancy.

2.6 “Hot Work” Permits

Prior to starting any hot work (e.g. welding, cutting, tar kettle use or other significant ignition source), a hot work permit must be obtained through the Construction Administrator.

2.7 Trenches and Excavations

- 2.7.1 Subcontractor shall review all underground utility drawings with the Construction Administrator prior to any excavation or trenching operations. A completed JPL Excavation Permit shall be obtained from the Construction Administrator prior to any digging operation (with the exception of hand digging 12 inches). Subcontractor shall submit a copy of its *Cal/OSHA Annual Permit and Written Notice to Dig* in the Safety Manual.
- 2.7.2 Subcontractor shall submit a trenching and shoring plan for trenches and excavations deeper than five feet in the Safety Manual. If a trench or excavation will be deeper than 20 feet, a plan shall be completed and signed by a Professional Engineer (PE) registered in the State of California.

- 2.7.3 During any excavation, if an inadvertent discovery of human remains, funerary objects, sacred objects, or cultural artifacts on JPL facilities occurs, excavation must cease immediately. Notification of such inadvertent discovery must be given to the Construction Administrator immediately following discovery.

2.8 Elevated Work Surfaces

- 2.8.1 A copy of Subcontractor's current Cal/OSHA permit for all scaffolding (erection or dismantling) over 36 feet shall be submitted in the Safety Manual.
- 2.8.2 When there is a potential fall of 6 feet or more, Subcontractor shall utilize one or more of the following means of protection: guardrail system, personal fall arrest system, safety monitoring system, Safetynet system, warning line system, or covers. Selection of the means to protect personnel will be reviewed by OSPO in advance of the applicable work.

2.9 Lifting Operations And Lifting Permit

- 2.9.1 For any mobile lifting and elevating operations, Subcontractor shall submit both a completed "Lift Permit", Form 7118 located at <http://acquisition.jpl.nasa.gov/> and a Lift Plan to the Construction Administrator a minimum of five business days in advance. The Lift Plan shall include the following:
- Date, time and location of the lifting operation
 - Indicate whether Subcontractor is providing the crane or the name of the crane company, if different
 - Current annual & quadrennial crane certificates
 - Operator's license that meets the requirements of section 5006.1 ("Mobile Crane and Tower Crane-Operator Qualifications and Certification") of the Cal OSHA General Industry Safety Orders
 - Size and type of mobile crane
 - Safe work plan: description of work, crew, equipment and personal protective equipment, risk assessment, and preventive measures
 - Diagram of the staging and work area
 - Name of JPL Construction Administrator
- 2.9.2 OSPO will review Subcontractor's Lift Plan and issue a permit as needed. The permit may require Subcontractor to comply with certain conditions, including posting notices of roadway closures. The JPL Lifting Devices Manager will review the Lift Plan for work involving JPL Critical Items (JCI).
- 2.9.3 Subcontractor is responsible for maintaining a safe perimeter around all lifting

and elevating operations. All roadways and personnel access points in or near the lifting operation must be blocked or cordoned off and Subcontractor personnel posted at the periphery of posted areas to prevent pedestrians from entering into the hazard zone.

2.10 Confined Space Entry

2.10.1 The types of confined spaces found at JPL include, but are not limited to, the following:

- Manholes
- Cooling towers
- Elevator pits
- Ground tanks (underground and above ground)
- Underground tunnels
- Environmental test chambers

2.10.2 Subcontractor shall submit a copy of its Confined Space Program for permit and non-permit as required confined space entries in the Safety Manual.

2.10.3 Subcontractor must provide a “Confined Space Entry Permit”, Form 2702 located at <http://acquisition.jpl.nasa.gov/> to allow and control entry into a confined space required such permit, in accordance with 8CCR5157.

2.10.4 Subcontractor shall provide 24-hour advance notice to the Construction Administrator prior to scheduling entry into a confined space.

2.10.5 Subcontractor shall be responsible for testing, classifying and permitting spaces as permit-required or non-permit required confined space entries, as well as providing appropriate test equipment and standby rescue personnel and equipment.

2.11 Flight Program/Project Safety

2.11.1 If the Subcontract involves flight project work, Subcontractor shall include in each Program/Project Plan prepared for a flight project a description of the risk management process that addresses the safety needs and special safety monitoring required for the flight program/project.

2.11.2 Project Plans containing such requirements will be referenced in the Contract Data Requirements List (CDRL) issued by the Subcontracting Officer under the Caltech/NASA Prime Contract. Subcontractor shall comply with any such requirements.

2.12 Electrical Safety/Arc Flash Hazard Protection

- 2.12.1 Subcontractor shall submit an electrical safety plan in the Safety Manual.
- 2.12.2 Energized Electrical Work Permit- If electrical equipment operating at 50 volts or more (phase to ground) cannot be de-energized due to the equipment design or operational limitations, work to be performed shall be considered energized electrical work and shall be performed by a written "Energized Electrical Work Permit", Form 7029 located at <http://acquisition.jpl.nasa.gov/>.
- 2.12.3 Only qualified electrical personnel holding a valid certification issued by the State of California are permitted to perform any installation, wiring, trouble shooting or repair of electrical equipment.
- 2.12.4 Subcontractor personnel performing work on, or associated with, exposed lines or equipment energized at 50 volts or more shall have first aid training including cardiopulmonary resuscitation (CPR). Subcontractor personnel shall be certified annually to perform CPR, and first aid training shall take place once every three years.

2.13 Lockout/Tagout/Blockout

- 2.13.1 Subcontractor shall submit its Lockout/Tagout/Blockout Program to perform any maintenance and servicing of machinery, equipment, or energy source(s) in the Safety Manual.
- 2.13.2 Subcontractor shall ensure that a machine/equipment-specific lockout/tagout/blockout procedure is established in writing prior to performing any maintenance and/or servicing of machinery, equipment, or energy source(s), and shall ensure compliance to the procedure by its employees.
- 2.13.3 For the purposes of lockout/tagout/blockout, only red padlocks shall be used. Locks shall be individually keyed.
- 2.13.4 Locks shall be installed with a Lockout tag that has the name and phone number of the Authorized Individual installing the lock.
- 2.13.5 Each lock shall have a primary key. The primary key shall, at all times, be in the possession of the Authorized Individual that applied the lock.

2.14 Human Factors

As defined by NASA, Human Factors is a multi-disciplinary effort to acquire knowledge about people at work and apply that knowledge to the functional relationships between people, tasks, technologies, and environment for safe and efficient human performance. Occupations requiring prolonged or unusual work schedules may impact

employee's health, safety, work quality, and program/project activity schedule. JPL gives high priority to addressing potentially detrimental impacts of unusual or varying work times to create a safe, healthy work environment, and minimize undesirable outcomes. If Subcontractor personnel will be working greater than 60 hours over a two-week period, Subcontractor shall develop human factors mitigation procedures and provide them to the Construction Administrator as requested.

2.15 Hearing Conservation

Note: *Hearing Conservation is not applicable to construction work.*

2.15.1 Subcontractor shall comply with the NASA Hearing Conservation requirements specified in NPR 1800.1C, NASA Occupational Health Program Procedures, Section 4.8 for its personnel. Access this document at:
<http://nodis3.gsfc.nasa.gov/>.

2.15.2 Subcontractor shall be responsible for maintaining a Hearing Conservation Program and performing noise monitoring as required by NPR 1800.1C.

2.15.3 Subcontractor shall provide a copy of its written Hearing Conservation Program, training records, and evidence of annual audiograms, if requested.

2.16 Ground Based Pressure Vessels and Systems

Access - The JPL Pressure Systems Manager, the pressure vessel and/or system (P/VS) owner's Inspector and the Inspector's delegates shall have access to any place where work concerned with pressure vessels or pressurized systems (PV/S) is being performed. This includes manufacture, fabrication, heat treatment, assembly, erection, examination, and testing of the PV/S. The JPL Pressure Systems Manager shall have the right to audit any examination, to inspect the piping using any examination method specified by the engineering design, and to review all certifications and records necessary to ensure that the current applicable Building Code and NPD 8710.5 (dated 3/12/2008) requirements are met.

2.17 Boom Lift Parking and Storing

Subcontractor shall adhere to the parking and storing requirements for boom lifts listed below:

- Select a safe parking location with a firm level surface clear of obstruction and traffic
- Lower the boom to the stowed position, rotate the turntable so that the boom is between the non-steering wheels
- Turn the key switch to the off position and remove the key to secure from unauthorized use
- Chock the wheels.

III. JPL Safety Reporting

- 3.1 Safety concerns may be reported by calling 818-354-4711 or the JPL Hazard Reporting Hotline at 818-393-6483.

IV. NASA Safety Reporting System (NSRS)

- 4.1 The NASA Safety Reporting System (NSRS) is an anonymous, voluntary, and responsive reporting channel to notify NASA's upper management of concerns about hazards. Any NASA employee, Subcontractor employee, or Subcontractor working in support of NASA may use the NSRS to report safety concerns. The NSRS is designed to supplement local hazard reporting channels. Any hazards or safety concerns should be reported using established safety reporting procedures.

We encourage all subcontractors to report safety concerns by using the JPL Safety reporting process as noted above in Section III as the first step.

V. Environmental Requirements

5.1 Hazardous Waste

Note: Subcontractor shall not use JPL trash containers for any type of disposal at any time. All general trash is the responsibility of the Subcontractor except as noted in Section C, below.

Note: Unless otherwise specified in the Subcontract, Subcontractor shall remove all containers with unused chemicals that are not waste from the site, including partially full containers of adhesive, solvent, paint, roofing tar, etc. Disposal of partially or completely filled chemical containers at JPL is prohibited.

- 5.1.1 Subcontractor is responsible for properly segregating hazardous waste. Subcontractor shall maintain *all* hazardous waste containers located on the work site in a manner which conforms to the Resource Conservation and Recovery Act, and applicable state laws.
- 5.1.2 Subcontractors shall supply its own roll off bins and drums for hazardous waste accumulation and transport. All roll off bins and drums are required to be D.O.T. compliant.
- 5.1.3 Subcontractor shall ensure all hazardous waste is properly identified and put into the properly labeled container. All containers should remain closed except when adding waste to the container. Accumulate hazardous waste indoors. Keep hazardous waste containers near the point of generation. Segregate waste by type to prevent co-mingling; flammable, corrosive, toxic, or reactive.
- 5.1.4 Subcontractor shall coordinate with the Construction Administrator for approval of any hazardous waste accumulation, transport or disposal. *Subcontractor is*

responsible for off-site disposal of hazardous waste.

- 5.1.5 Subcontractor shall schedule hazardous waste collection by calling EAPO Representative when the *quantity limitation of the container is reached, or within nine (9) months of the waste accumulation start date on the 2799-S hazardous waste label, whichever occurs first. Up to 55 gallons of the same type of hazardous waste, or one quart of acutely hazardous waste at the point of generation may be accumulated for up to nine (9) months, or when the quantity limitation of the container is reached, whichever occurs first.*
- 5.1.6 Subcontractor shall prepare Hazardous Waste manifests, Land Disposal Restriction forms and profiles and send copies of the documents for approval to the EAPO Representative at least 72 hours prior to scheduled transport. *Only the EAPO Representative or designee has the authority to sign manifests for loads of hazardous waste or acutely hazardous waste.*
- 5.1.7 Subcontractor shall manage all empty hazardous materials containers greater than five (5) gallons, and empty extremely hazardous waste containers, as hazardous waste.
- 5.1.8 Fluorescent light tubes shall be managed as a hazardous waste (universal waste), boxed, and sent to the rear of Building 305.

5.2 Air Quality

- 5.2.1 Subcontractor shall post applicable equipment operating permits as necessary. Contact the Construction Administrator for any questions regarding proper permitting requirements.
- 5.2.2 Contaminated wipes shall be disposed of as hazardous waste. Used or contaminated rags shall be contained when not in use.
- 5.2.3 Subcontractor shall use compliant paint gun(s). Prior to use of paint gun(s), contact the Construction Administrator to ensure the use of paint gun(s) has been approved and/or is appropriate to use.
- 5.2.4 JPL falls under the South Coast Air Quality Management District requirements; therefore all Subcontractors shall use material which is compliant with these standards District's rules and regulations.
- 5.2.5 Subcontractor shall report usage and emissions from their internal combustion engines directly to the South Coast Air Quality Management District as required if operated under 72 hours/quarter, and shall provide name, address and type of work performed to the EAPO Representative AND Construction Administrator.

Note: *Monitoring and reporting of the duration of operating time and emissions from equipment operated by Subcontractors is not required if the equipment is exclusively used for the following purposes that do not contribute to the manufacturing process: landscaping and grounds maintenance, maintenance and repair of structures, equipment, and their appurtenances, construction and demolition, or environmental investigation, testing, and remediation.*

5.3 Trash and Recyclable Material

5.3.1 If Subcontractor construction activity is expected to generate debris in excess of 10 cubic yards over the course of the activity, Subcontractor shall contact the Construction Administrator. Subcontractor shall procure a separate dumpster specified for the debris and arrange for its disposal. Plant material and soil shall be disposed of by the Subcontractor and not placed in JPL bins, with the exception of:

- Scrap metal is allowed in the JPL scrap metal roll-off bin.
- Cardboard waste is allowed in the JPL cardboard bin.

5.4 Wastewater

5.4.1 Prior approval must be obtained from the EAPO Representative or designee before Subcontractor washes any material into the sanitary sewer system.

5.4.2 Subcontractor shall under no circumstances wash any materials outside without prior approval from the EAPO Representative or designee.

5.4.3 All chemical containers greater than five (5) gallons shall have secondary containment and be covered when stored outside.

5.5 Soil

5.5.1 Subcontractor shall contact the Construction Administrator for pre-approval of all disposal sites to which JPL soil and asphalt is sent.

5.5.2 In case of an unusual odor or color in the soil, Subcontractor shall contact the Construction Administrator for resolution determination.

5.5.3 All soil storage piles must be covered by plastic unless exempted by the EAPO Representative or designee. If Subcontractor requests soil storage piles remain uncovered, Subcontractor will contact the Construction Administrator for a determination.

5.6 Chemicals Brought On Premises

- 5.6.1 No ozone depleting chemicals allowed for cleaning purposes may be used at JPL. For a listing of such chemicals see <http://www.epa.gov/ozone/science/ods/classone.html>
- 5.6.2 No NESHAP Halogenated Solvents allowed for cleaning purposes may be used at JPL as follows: Carbon Tetrachloride, Chloroform, Methylene Chloride, Perchloroethylene, Trichloroethylene, and 1-1-1-Trichloroethane.
- 5.6.3 Restricted use of Volatile Organic Compounds (VOC) for cleaning purposes: Subcontractor shall contact the Construction Administrator for prior authorization to use any VOC at JPL.
- 5.6.4 The EAPO Representative or Construction Administrator will review Subcontractor chemical information and advise Subcontractor on the proper disposal of the container per JPL requirements for all targeted chemicals procured or otherwise brought on premises by Subcontractor. Subcontractor must provide a list of the identified chemical(s) along with the MSDS in the Safety Manual.

5.7 Safety Manual Documentation

Note: *To the extent required by Applicable EH&S Standards above, the mandatory documents listed below shall be provided to the JPL Subcontracts Manager in a Safety Manual at least 10 days prior to start of work.*

- Injury and Illness Prevention Program (IIPP), including applicable documentation referenced herein. (8CCR 3203)
- Emergency Modification Rate (EMR)
- Hazardous Communication Program. (8CCR 5194)
- Site specific safety plan, detailing procedures for site specific activities. (8CCR 3203 & 1509). A sample Site Specific Safety Plan is found at: <http://acquisition.jpl.nasa.gov/>.
- Site specific permits (i.e., trenching and shoring (8CCR1503); confined space entry (8CCR5157); asbestos abatement notification (8CCR1529), as required.
- Required certifications and/or training records of employees as referenced in this document. (8CCR3203)
- Medical approval to wear respiratory protection. (8CCR1531, 5144)
- Medical approval to work with, but not limited to asbestos, cadmium and lead. (8CCR1529, 1532 & 1532.1)
- Hearing Conservation Program (8CCR 5095-5100)

- Bloodborne Pathogens Program (8CCR 5193)
- Respiratory Protection Program (8CCR 3409 and 5144)
- Heat Stress Program (8CCR 3395)
- Lockout/Tagout/Blockout (8CCR, 3314).
- Baseline medical eye exam for Class 3B and 4 laser users. (ANSI Z136.1, Section 6.3.1)
- Training Documentation: Proof of training in the following areas for all applicable personnel working on the job site:
 - asbestos and lead
 - confined space
 - hazard communication
 - fall protection
 - mobile crane operations
 - scaffold erection/dismantling
 - respiratory protection
 - power-actuated tools
 - industrial/lift trucks (forklifts) and tractors
 - electrical
 - elevating work platforms and aerial devices
 - excavation
 - lockout/tagout/blockout
 - heat stress
 - roofing operations
 - welding and cutting safety
 - LASER
 - ladders